Public Report for ESA-029-3

Company	Owens Corning	**ESA Dates**	March 12-14, 2008
Plant	Kearney, New Jersey	**ESA Type**	Steam System
Product	Asphalt Roofing Products	**ESA Specialist**	Glenn T. Cunningham

Brief Narrative Summary Report for the Energy Savings Assessment:

Introduction:
The Kearney, New Jersey Plant of Owens Corning Company is an asphalt processing plant producing asphalt roofing shingles for the construction industry. The steam system consists of one 20,000 lbm/hr rated heat recovery steam generator. The majority of the steam produced is used for heating the asphalt in tanks and lines. The EPA requires the plant to recover and combust to 1,550 F the vapors from the asphalt stored in the various tanks and from the process converters. A heat recovery steam generator (HRSG) produces 2,000 to 4,000 lbm/hr more steam than is needed on site. The excess steam flows to an air cooled condenser unit that dumps the heat to the atmosphere. The shingle plant next door to the asphalt plant has a hot oil system requiring input energy from natural gas. The heat from the HRSG can be used to preheat the oil before it enters the oil heater. Some of the excess steam can be used to preheat the storage tank exhaust air. This site has heat in the form of excess steam and boiler stack gas that can be used to reduce natural gas usage.

Objective of ESA:
To introduce the US DOE Steam Suite of software tools to plant personnel and use the tools to identify energy saving opportunities related to the plant steam system.

Focus of Assessment:
Plant's steam system and US DOE steam software tools.

Approach for ESA:
The Steam System Assessment followed the following outline:
•Learned SSAT Software
•Built Base Case SSAT Model of the combined thermal oxidizer/heat recovery steam generator
•Examined potential projects with SSAT
•Learned 3EPlus Software (Insulation)
•Toured Plant
•Used infrared imaging camera to examine boilers and steam distribution system
•Reviewed the SSST provided by plant

General Observations of Potential Opportunities:
- Indicate total plant natural gas cost for base year, 2006: Approximately 350,000 MMBtu/yr
- Indicate total plant electrical cost for base year, 2006: Approximately 2,700,000 kWh/yr

- Near Term Opportunities:
    - **Optimize asphalt storage tank exhaust air flow rate with plant operating configuration** – Currently, the induced draft fan providing air flow through the thermal oxidizer/heat recovery steam generator is operated under a water vacuum. There are several different operating configurations for the plant which should require less air flow and hence, save natural gas usage by the thermal oxidizer. It is suggested that all common operation configurations of the plant be investigated to determine the minimum amount of air flow required for vapor capture. Once this has been determined, then the vacuum setting on the fan control can be reset depending on how the plant is being operated. The implementation cost is estimated to be zero as it requires some study of fan settings, but no equipment or capital cost. The simple payback for this project is immediate.

- **Use excess steam to preheat storage tank exhaust air before it enters the thermal oxidizer** – Exhaust air drawn from the asphalt storage tanks and converters reaches the thermal oxidizer. This air flow is then heated with natural gas to a temperature of 1,550 F to destroy compounds harmful to the environment. By installing a steam preheating coil just before the thermal oxidizer, the air flow can be preheated thus, reducing the amount of natural gas needed. It is recommended that a steam preheat coil be installed in the duct carrying the exhaust air just prior to the thermal oxidizer.

- **Use waste heat from the boiler stack gas to preheat oil from the shingle plant** – The boiler stack gas currently discharges to the environment. There is a hot oil system in the neighboring Owens Corning Shingle Plant that heats process oil with a natural gas fired heating unit. Heat from the stack gas can be used to preheat the oil and reduce the natural gas used by the oil heater burner. The oil heater is about 600 feet away from the boiler stack.

- Medium and Long Term Opportunities:
  - There were no medium or long term opportunities identified during this assessment.

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